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Examiner : Edward R. Cosimano
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Amendments to the Specification

Please replace the paragraphs [0089], [0101], [0157], [0158], [0159], [0160], [0165], [0173], [0179], [0180], [0184], and [0189] with the following amended paragraphs. Although the original patent application was filed without paragraph numbers, the published application included paragraph numbers. These paragraph numbers are identical to corresponding U.S. Publication No. 2003/0101148 A1, published May 29, 2003.

[0089] Turning now to FIGS. 4-7 and 33, the structural details of the postage system 300 will now be described. With specific reference to FIG. 4, each end user computer 308 contains conventional computer hardware, including a user interface 402 with a keyboard 403, printer 404, display 405, and optional scale 406 for weighing mail pieces, data processing circuitry 408 (such as, e.g., a Central Processor Unit (CPU)) for executing programs, a communications interface 410 (such as, e.g., a modem, LAN connection, or Internet connection) for handling communications with the centralized postage-issuing computer system 305/306/307 over the communications link 314 or for handling communications with the master tracking computer system 310 over the communications link 322, and local memory 411. The user interface 402 is configured to allow the end user to request unique tracking ID's and self-validating unique postage indicia and to enter postage information associated with the unique tracking ID and postage indicium requests, as well as to print the unique tracking ID's and self-validating unique postage indicia on mail pieces. The local memory 411, which will typically include both random access memory and non-volatile disk storage, stores a set of mail handling procedures that are embodied in various software modules 412, and an end user database 415 that contains information needed by mail handling modules 412, including local account balance information, transaction records representing all recent postage purchase transaction by the end user computer 308, and session encryption keys. Although the local memory 411 is depicted in FIG. 4 as a single memory device, it should be understood that it can be implemented in a multitude of memory devices as well.

[0101] Referring specifically to FIG. 5, the centralized postage-issuing computer system 306 differs from the centralized postage-issuing computer system 305 in that it provides means through which the master tracking computer system 310 issue tracking ID's to the end user

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computers 308. To the extent that the components of centralized postage-issuing computer systems 305 and 306 are similar, identical reference numbers have been used. In addition to the components contained in the centralized postage-issuing computer system 305, the centralized postage-issuing computer system 306 comprises postage dispensing modules 426, which additionally include a tracking ID request module 438 and a communications module 434. The tracking ID request module 438 is configured for generating and transmitting requests for unique tracking ID's to the master tracking computer system 310 in response to receiving requests for unique tracking ID's from the end user computers 308. These requests take the form of query streams and contain the same information as in the tracking ID requests generated by the tracking ID request module 414 in each of the end user computers 308. The communications module 434 is configured for handling communications with the end user computers 308 over the communications links 314 (such as, e.g., receiving tracking ID requests and postage indicium requests and transmitting tracking ID's and unique postage indicia). The communications module 434 is further configured for handling communications with the master tracking computer system 310 over the communications link 316 (such as, e.g., transmitting tracking ED requests and receiving tracking ID's).

[0157] At steps 1012 and 1014, the postage validation computer system 362 receives the self-validating postage indicium from the centralized postage-issuing computer system 356 and displays its contents to the postal verifier. In particular, the communications interface 882 then, under control of the communications module 892, receives the self-validating postage indicium from the centralized postage-issuing computer system 356 over the communications link 368 (step 1012), and the postage scanning station 884 displays its contents to the postal verifier (step 1012). At step 1014, the verifier then manually compares the contents of the self-validating postage indicium to the human-readable information (e.g., mailing date, postage amount, origin of mail piece, and destination of mail piece) on the mail piece. If the contents of the self-validating postage indicium do not match the human-readable information, this is an indication of likely fraudulent use of a postage indicium and is treated as such.

[0158] At steps 1016-1018, the postal verifier validates the postage indicium itself by operating the postage indicia validation module 894. In particular, the public key association

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submodule 896 obtains from the set of public keys 897 the public key corresponding to the Certificate Serial Number (item #3 in Table 2) within the postage indicium (step 1016). The digital signature verification submodule 898 then verifies the digital signature of the postage indicium to determine if they are consistent (step 1018). If the verification process returns a Boolean true, this indicates that the postage indicium was in fact generated by a secure central computer 356 for a mail piece of the same approximate weight, origin and destination as the mail piece being processed. If copy fraud is to be detected, a copy fraud detection process using unique identifiers or similar to the process disclosed with respect to FIG. 14 can be utilized.

[0159] After the postage has been validated or rejected, the database management module 893 stores the postage information, along with the results of the validation process (step 1020). If valid, the mail piece is then submitted for normal delivery processing (step 1022).

[0160] It should be noted that rather than have the postal verifier validate the postage indicium, the centralized postage-issuing computer system 356 itself can validate the postage indicium. In this case, the postage indicia validation module 894 will be located in the centralized postage-issuing computer system 356. Thus, after the centralized postage-issuing computer system 356 retrieves the self-validating postage indicium corresponding to the indexing identifier at step 1008, it will validate the postage indicium itself using a corresponding public key. If it is valid, the centralized postage-issuing computer system 356 will transmit a Boolean true, along with the already validated postage indicium, to the postage validation computer system 362, which will then perform postage validation steps 1014, 1016, 1018, and 1020. If it is invalid, the centralized postage-issuing computer system 356 will transmit a Boolean false to the postage validation computer system 362, which will then store the results of the validation process as being invalid at step 1020.

[0165] Referring to FIG. 37, and with general reference to FIGS. 34-36, the procedures for verifying the sender of a mail piece will now be described. It is assumed that the tracking ID (as the indexing identifier) and sender identification information, along with the postage information, has already been recorded in the centralized postage-issuing computer system 356, and specifically the postage database 830, when the tracking number and postage was issued to

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the end user (presumably, the sender of the mail piece). At steps 1400-1404, the mail recipient computer 378 generates and transmits a request for sender identification information to the centralized postage-issuing computer system 356 by entering the tracking ID printed on the received mail piece into the user interface 1302, which displays a window similar to the one illustrated in FIG. 34. The sender identification request module 1314 then generates a sender identification request with the associated tracking ID (step 1402). The communications interface 1310 then, under control of the communications module 1318, transmits the sender identification request over the communications link 384 (step 1404).

[0173] It should be noted that the date of this query is Aug. 23, 2001, and the postage transactions in question were completed three days earlier. The USPS delivery status for the first package presents the phrase "Your item was accepted at 10 pm on August 21 in Palo Alto, Calif. 94301. This phrase is misleading in that it infers that the USPS actually took possession of this package. In reality, it only indicates the date/time in which the tracking information was posted to the master tracking computer system. When this message persists for days or weeks, one must conclude that the tracking ID was indeed issued, but the package never entered the postal system. As another example, an audit inquiry can reveal all postage transaction information in a specific user account.

[0179] Specifically, the postage dispensing/refund eligibility modules 1126 include a communications module 1134, database management module 1136, tracking ID request module 1138, postage indicium request validation module 1140, postage indicium generation module 1142, delivery status request module 1143, filtering module 1145, refund inquiry module 1147, and refund display module 1149. The delivery status request module 1143 is configured for generating a request for the delivery status for each tracking ID stored in the postage database 1130. The filtering module 1145 is configured for variously generating refund information by filtering and formatting the postage transaction information retrieved from the postage database 1130, as will be described in further detail below. In addition to being configured for providing the communications previously described with respect to the communications module 434, the communications module 1134 is configured for transmitting delivery status requests to, and receiving confirmatory delivery status information from, the master tracking computer system

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390 over the communications link 396.

[0180] The database management module 1136 is configured for storing and retrieving pertinent information in and from the customer database 1128, postage database 1130, and finance database 1132. This function includes storing and retrieving a tracking ID and an associated delivery status, and updating that associated delivery status with confirmatory delivery status information received from the master tracking computer system 390. As will be described in further detail, the confirmatory delivery status information indicates whether a mail piece carrying a tracking ID has, in fact, been delivered. The refund inquiry module 1147 is configured for generating an inquiry for postage refund information. In the illustrated embodiment, the inquiry contains a user account ID and password and the refund inquiry, which as previously discussed, can include various types. The refund display module 1149 is configured for displaying on the display 1127 the postage refund information filtered by the filtering module 1145.

[0184] The tracking information maintenance modules 1170 include a communications module 1174, tracking ID allocation module 1176, database management module 1178, and refunded postage polling module 1180. In addition to being configured for providing the communications previously described with respect to the communications module 474, the communications module 1174 receives delivery status requests from, and transmits confirmatory delivery status information to, each centralized postage-issuing computer system 386 over the communications links 396. The confirmatory delivery status information is obtained from tracking stations (not shown), which scan tracked mail pieces when they are delivered. The tracking ID allocation module 1176 is configured for performing the same functions as the tracking ID allocation module 476 previously described in the master tracking computer system 310. The database management module 1178 is configured for storing and retrieving assigned tracking ID's and associated postage information (including delivery status) to and from the tracking information database 1172. The database management module 1178 is further configured for updating the tracking information database 1172 with refund information. That is, if a specific postage transaction has been refunded, the database management module 1178 will associate a refund indicator with the postage information relating to the specific postage

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transaction. The refunded postage polling module 1180 periodically polls the tracking information database 1172 to determine if a mail piece associated with any refunded postage transaction has been delivered.

[0189] Referring to specifically FIG. 32, and with general reference to FIG. 29, the procedures for issuing a refund will now be described. At step 1230, the account administrator operates the user interface 1123 of the centralized postage-issuing computer system 386 to make a refund inquiry. The type of refund inquiry can be, e.g., any of the three refund inquiries described above (refund eligible inquiry, audit review, or refund pattern audit), but for purposes of the following explanation the refund eligible inquiry will be described. At step 1232, the database management module 1136 retrieves for a specific user account the postage transaction information from the postage database 1130. At step 1234, the filtering module 1145 selects the postage transaction information representing duplicative postage transaction. In particular, it selects the postage transactions that carry tracking ID's that have never been refunded in the past, that are issued for the specific user account, and that have identical key postage transaction items, i.e., postage transaction date, destination zip code, service class, and postage amount. At step 1236, the filtering module 1145 then determines if any of the selected postage transactions have been previously refunded. If so, it is determined that a refund for that postage transaction is forthcoming. In this case, the database management module 1136, at step 1238, credits the user's account for the misprint in the finance database 1132. At step 1240, the database management module 1136 then date/time stamps the misprint postage transaction in the postage database 1130. In this manner, the filtering module 1145 will filter out this refunded postage transaction in the future, so that it is not refunded multiple times. At step 1242, the account administrator issues a refund request to the postage refund center 392 of the postal authority (e.g., USPS).